

REMARKS

In the Office Action dated June 2, 2005, claims 1-18 are pending, claims 16-18 are withdrawn. Reconsideration is requested for at least the reasons discussed hereinbelow.

Applicant submits herewith Replacement Sheets for drawing Figures 4 and 5A-5E wherein the figures are amended to include the legend --Prior Art--. Acceptance of the amended figures is requested.

Claim 3 has been amended to correct grammatical language as requested by the Examiner. Claim 2 has been amended to correct spelling.

Claims 1-6 and 8-15 are rejected under 35 U.S.C. §102(b) over JP 2000-164837 (JP'837). JP'837 describes a solid state image sensor having a convex lens formed as an interlayer microlens between a color filter and a light receiving portion. This lens and its manufacture are discussed in detail at pages 3-17 of the present specification with reference to Figures 4 and 5A-5E.

As noted beginning at page 16, line 17:

In the method described above, the BPSG film is subjected to the reflow process under high temperature, and the lens surface of the convex-shape protruding downward on the lower side of the interlayer lenses 111a are defined based on the concaved portions on the surface of the first flattening film 110. Such method has a further problem that lens surfaces of the convex-shape on the lower side of the interlayer lenses 111a may not be stably and uniformly formed. . .

See page 3, paragraph [0019] of the translation of JP'837, which states the light-shielding film is covered by a first flattening layer by reflow film such as BPSG. Thus, the discussion of the prior art in the present application is directly applicable to JP'837.

As a result of the lower side of the interlayer lens being defined by concaved portions on the surface of the first flattening film 110, the center of the lower convex

shape is not formed to coincide with the center of the open region 109x in the light shield film. Because the upper surface of the interlayer lens is formed having a center of the convex shape that coincides with the center of the open region 109x in the light shield film. As a result, the optical axis of the microlens formed in JP'837 is tilted and not parallel to the central axis of the open region 109x in the light shield film.

Therefore, contrary to the conclusion statement by the Examiner, JP'837 ***fails*** to teach or suggest that the interlayer lens be positioned such that the optical axis of the interlayer lens is parallel to the central axis of the opening region in the light shield film, as claimed in the present application. Indeed, it is not seen where JP'837 even suggests that having such a parallel axis might be important. Yet, present Applicant has found that providing the optical axis of the interlayer lens parallel to the central axis of the opening region in the light shield film can provide increased sensitivity in the light receiving portion of the image sensor. This permits the image sensor to be fabricated in higher density for use in devices that are desired to be smaller.

Thus, it is not seen how the present invention is anticipated by JP'837. Further, it is not seen how the presently claimed invention would have been obvious to one of ordinary skill in the art in view of JP'837.

Claim 7 is rejected under 35 U.S.C. §103(a) over JP 2000-164837 (JP'837) in view of JP 4-111354 (JP'354). The Examiner cites JP'354 for a teaching of the use of an organic high-polymer film in a solid-state image pickup device. JP'837 is discussed in detail above. JP'354 does not make up for the deficiencies of JP'837. JP'354 also ***fails*** to teach or suggest that the interlayer lens be positioned such that the optical axis of the interlayer lens is parallel to the central axis of the opening region in the light shield film, as claimed in the present application.

Thus, it is not seen how the presently claimed invention would have been obvious to one of ordinary skill in the art in view of any combination of JP'837 and

JP'354.

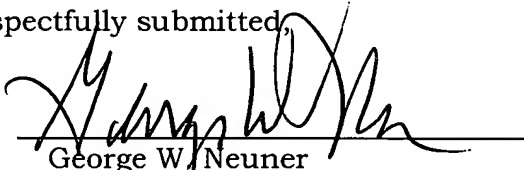
In view of the amendments and discussion above, it is respectfully submitted that the present application is in condition for allowance. An early reconsideration and notice of allowance are earnestly solicited.

If for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, the Commissioner is hereby authorized and requested to charge Deposit Account No. **04-1105**.

Date: August 26, 2005

Respectfully submitted,

By:


George W. Neuner
Reg. No. 26,964

Edwards & Angell, LLP
P.O. Box 55874
Boston, MA 02205
(617) 439- 4444

Customer No. 21874

Amendments to the Drawings

Please amend Figures 4 and 5A-5E to include the the legend --Prior Art-- as shown in the Replacement Sheets submitted herewith.